

A PRELIMINARY GENERIC KEY AND GEOGRAPHIC CHECKLIST OF
THE BORAGINACEAE IN CENTRAL AMERICA AND PANAMA

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This paper is the result of a preliminary study of the borage family in Central America and Panama by Gentry. Also, it represents an initial stage in the preparation of a synoptic treatment of the family for this area. The borages are one of Gentry's main research interests, including both monographic and floristic work. A monographic study of the genus Bourreria is in progress.

The Boraginaceae in Central America and Panama are represented by 12 genera and 87 species (Table I). Three genera, Cordia (34 species), Heliotropium (14 species), and Tournefortia (19 species) total 67 species and comprise over 75 per cent of the species in the family, whereas Antrophora, Cynoglossum, Macromeria, Moritzia, and Rochefortia total nearly

one-half of the genera but represent only six per cent of the species in the family.

The geographic checklist was produced by a computer program run by Janos. He used the TAXIR information management-retrieval system developed by Robert Brill and George Estabrook. This was based on data obtained by Gentry from an herbarium study of the collections at Field Museum and the Missouri Botanical Garden and a literature survey.

Key to the Genera of the Boraginaceae

in Central America and Panama

1. Ovary entire or shallowly lobed, the style terminal; fornices absent at the mouth of the corolla tube; plants trees, shrubs or woody vines except in HELIOTROPIUM.
2. Style divided twice, the stigmas 4 (CORDIOIDEAE).
 1. CORDIA.
2. Style shallowly cleft to divided, the stigmas 2 or the style simple (sometimes absent), with a solitary stigma.
3. Style shallowly cleft to divided, the stigmas 2 (EHRETIOIDEAE).
 4. Plants armed with spines on the branches; leaves mostly clustered on short shoots. 2. ROCHEFORTIA.
 4. Plants unarmed; leaves not clustered on short shoots.
 5. Stamens included in the corolla tube; corollas small and inconspicuous, 5 mm long.
 3. ANTROPHORA.
 5. Stamens long exerted beyond the mouth of the corolla tube or if included then the corollas 35-50 mm long.

6. Corollas 10-40 mm long; filaments pubescent or sometimes glabrous; calyx closed in early bud, the lobes valvate; leaves entire. 4. BOURRERIA.
6. Corollas 3-6 mm long; filaments glabrous; calyx open in early bud, the lobes imbricate or valvate; leaves often dentate or serrate. 5. EHRETIA.
3. Style simple (sometimes absent) with a solitary stigma (HELIOTROPIOIDEAE).
7. Fruits dry, without a fleshy mesocarp, separating into 2-4 nutlets; herbs or sometimes low shrubs. 6. HELIOTROPIUM.
7. Fruits with a fleshy mesocarp, later drying and separating into 2-4 nutlets; shrubs, small trees or woody vines. 7. TOURNEFORTIA.
1. Ovary deeply 4-lobed, the style gynobasic, arising between the lobes of the ovary; fornices nearly always present at the mouth of the corolla tube; plants herbs. (BORAGINOIDEAE).
8. Nutlets armed with glochidiate prickles.
9. Nutlets erect, attached medially or near medially to the gynobase; well-developed prickles only on the dorsal side of the nutlets; style shorter than to slightly exceeding the body of the nutlets. 8. HACKELIA.
9. Nutlets widely spreading, attached apically to the gynobase; well-developed prickles on the dorsal and ventral sides of the nutlets; style greatly exceeding the body of the nutlets. . . . 9. CYNOGLOSSUM.
8. Nutlets unarmed.
10. Calyx lobed not more than one-half way to the base, densely covered with stout, uncinatate hairs; mature nutlets solitary, falling away tightly enclosed in the calyx. 10. MORITZIA.
10. Calyx parted to near the base, uncinatate hairs absent; mature nutlets mostly 2 or 4, falling away separately, not enclosed in the calyx.

11. Stamens long exserted beyond the mouth of the corolla tube; corolla lobes acute.

11. MACROMERIA.

11. Stamens included in the corolla tube; corolla lobes obtuse or rounded. 12. LITHOSPERMUM.

Table 1

Checklist of the Boraginaceae in Central America and Panama.

	Guatemala	Belize	El Salvador	Honduras	Nicaragua	Costa Rica	Panama
<i>Antrophora</i>					X		
<i>williamsii</i> I. M. Johnst.							
<i>Bourreria</i>							
<i>andrieuxii</i> (A. DC.) Hemsl.	X			X	X	X	X
<i>costaricensis</i> (Standl.) A. Gentry	X		X	X		X	
<i>huanita</i> (Llave & Lex.) Hemsl.		X		X			
<i>mollis</i> Standl.	X	X		X			X
<i>oxyphylla</i> Standl.		X			X		
<i>quirosii</i> Standl.					X	X	
<i>Cordia</i>							
<i>alliodora</i> (Ruiz & Pavón) Oken	X	X	X	X	X	X	X
<i>bicolor</i> A. DC.	X	X	X	X	X	X	X
<i>bifurcata</i> Roem. & Schult.							
<i>bullata</i> (L.) Roem. & Schult.							
<i>collococca</i> L.	X	X	X	X	X	X	
<i>cordiformis</i> I. M. Johnst.	X	X	X	X	X	X	
<i>costaricensis</i> I. M. Johnst.						X	
<i>coyucana</i> I. M. Johnst.						X	
<i>curassavica</i> (Jacq.) Roem. & Schult.	X	X	X	X	X	X	X
<i>cymosa</i> (Donn.-Sm.) Standl.						X	
<i>dentata</i> Poir.	X	X	X	X	X	X	X

Panama	X	X	X		X		X	X
Costa Rica	X	X	X		X	X	X	X
Nicaragua	X				X	X	X	X
Honduras	X		X		X	X	X	X
El Salvador	X	X			X	X	X	
Belize	X	X	X		X	X	X	
Guatemala	X	X	X	X	X	X	X	X

Cynoglossum

amabile Stapf & Drumm.

Ehretia

austin-smithii Standl.
luxiana Donn.-Sm.
tinifolia L.

Hackelia

mexicana (Schlecht. & Cham.) I. M. Johnston.
skutchii I. M. Johnston.

Heliotropium

angiospermum Murray
curassavicum L.
fallax I. M. Johnston.
filiforme Lehm.
foliosissimum Macbr.
fruticosum L.
indicum L.
lagoense (Warm.) Gürke
macrostachyum (DC.) Hemsl.

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